

Sacramento River Chinook Salmon,
Oncorhynchus tshawytscha, and Steelhead Trout,
Salmo gairdnerii, Sport Catch,
1967-68 through 1974-75

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INTRODUCTION

This paper summarizes the results of a chinook salmon, Onchorhynchus tshawytscha, and steelhead trout, Salmo gairdnerii, sport catch census conducted by the California Department of Fish and Game on the Sacramento River during the 8-year period, 1967-68 through 1974-75. Data presented do not include fishing effort or numbers of fish caught in Sacramento River tributaries.

METHODS

The census area included only the main stem of the Sacramento River and extended from Keswick Dam, the upstream limit of fish migration, downstream to Rio Vista, a distance of about 400 river kilometers (Figure 1). The river was divided into four sampling areas; (1) Keswick Dam to Red Bluff, (2) Red Bluff to Hamilton City, (3) Hamilton City to Knights Landing, (4) Knights Landing to Rio Vista. Each area contained several fishing resorts and at least one public boat launching ramp (Figure 1). During most years total catch and fishing effort data were obtained from about 55 fishing resorts, 12 public boat launching ramps and 5 popular bank fishing sites.

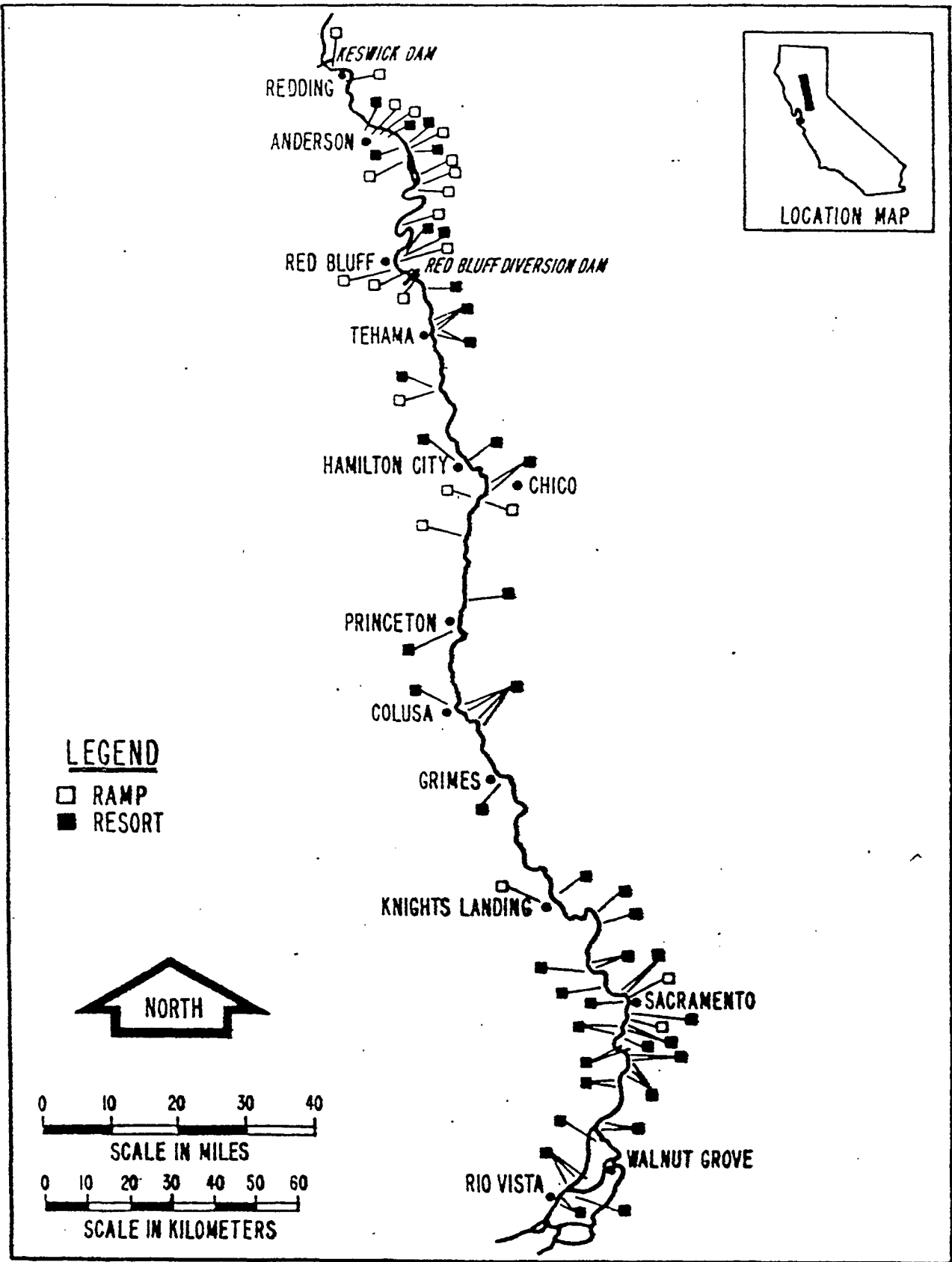


Figure 1. Sacramento River Salmon and Steelhead Sport Catch Area.

On the Sacramento River, most salmon are landed at fishing resorts, public boat launching ramps and popular bank fishing sites. Some are also landed at private boat docks, but are not included with catch estimates in this report. Numbers of salmon landed at fishing resorts were supplied by resort operators on a weekly basis. However, they did not supply fishing effort. To estimate fishing effort at resorts, it was assumed that the average catch per angler day and length of an average angler day, which were determined for fishermen using public boat launching ramps and bank fishing sites, also applied to resort fishermen and that data relating to catch per day and length of an average angler day obtained at one was applicable to the others. Catch figures were obtained from fishing resorts on a year around basis. However, at public boat launching ramps and bank fishing sites there were periods when no sampling was done. During these periods, total landings in each sampling area were calculated by multiplying the resort catch by a ramp to resort catch ratio obtained by sampling. The difference between the total landings and the resort catch represented fish landed at public ramps and bank fishing sites. Also, during periods when there was no sampling at ramps and bank sites, "total angler days" was estimated by dividing the estimated total number of salmon caught by the average "catch per angler day".

Landings and fishing effort for the five week days in each week were determined from one randomly sampled weekday, i.e., angler success and catch per effort on all week days in a particular week were considered equal. Angler success and catch per effort on both weekend days and/or holidays in a particular week were also considered equal. When a weekday or weekend day of a particular week was not sampled, the landings and effort were estimated by averaging the landings and effort from the previous and subsequent weeks.

Steelhead are landed at the same places, as well as at many additional bank fishing sites and private docks, that salmon are. In contrast to salmon, however, a much greater proportion of the steelhead are landed at bank fishing sites and private docks. The method used to estimate salmon catch and effort at resorts, public boat launching ramps and bank fishing sites was also used to estimate fishing effort and numbers of steelhead landed there. However, total steelhead landings were obtained by increasing catches at public ramps, resorts and bank fishing sites, where salmon are landed, by 40 percent. This increase was indicated by Dralle (1965) who found that Sacramento River steelhead anglers fishing from shore and private docks took 40 percent of all steelhead.

RESULTS

Salmon

Four runs or races of chinook salmon spawn in the Sacramento River each year. The fall-run spawns from early October through December, late fall-run from early January through mid-April, winter-run from mid-April through mid-July and Spring-from late-August through early October (Hallock and Resenbichler, 1980). No effort has been made to separate the total salmon caught into numbers from the various runs. However, based on their migration patterns and relative abundance during the study period most salmon caught between July 1 and December 31 are fall-run fish, followed in order by late fall-, winter- and spring-run fish; whereas most salmon caught between January 1 and June 30 are winter-, followed in order by late fall- and spring-run fish. The catch figures obtained indicate that an average of about 17,500 salmon were caught annually (Table 1). Each year two peaks occurred in the landings, one in the spring and the other in the fall. In nearly half of these years, the spring and fall salmon catches were about equal. Fishing effort averaged about 112,000 angler days annually.

Table 1

Estimated Sacramento River Salmon Catch and Angler Days

Year	Keswick Dam to Red Bluff		Red Bluff to Hamilton City		Hamilton City to Knights	City to Landing	Knights Landing to Rio Vista		Total	
	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days
1967-68	7,363	29,241	3,552	18,309	5,414	27,862	6,622	59,019	22,951	134,431
1968-69	4,767	23,188	2,403	8,441	4,315	15,902	3,974	30,383	15,459	77,914
1969-70	4,112	14,160	1,918	8,484	5,503	13,703	5,985	37,897	17,518	74,244
1970-71	7,231	31,670	4,659	24,994	4,752	22,707	6,670	57,981	23,312	137,352
1971-72	4,988	23,448	4,458	27,243	5,825	45,928	9,047	107,135	24,318	203,754
1972-73	5,236	20,650	2,965	15,538	3,004	21,221	4,400	43,015	15,605	100,424
1973-74	3,069	12,188	821	4,234	1,974	10,157	7,033	62,680	12,897	89,259
1974-75	3,247	8,467	1,552	15,069	1,338	27,178	2,019	28,584	8,156	79,298
Total	40,013	163,012	22,328	122,312	32,125	184,658	45,750	426,694	140,216	896,676
Av.	5,002	20,377	2,791	15,289	4,016	23,082	5,719	53,337	17,527	112,085

1/ Average catch per angler hour = 0.034

2/ Length of average angler day = 4.62 hours

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Steelhead

There is one annual run of adult steelhead in the Sacramento River. They start migrating upstream past the mouth of the Feather River in July and the run continues through the following March. The peak of the run passes the mouth of the Feather River in late September or early October.

The steelhead sport catch averaged about 18,000 annually during the eight year study period, and sixty-six percent were landed in October and November. Fishing effort averaged about 110,000 angler days annually (Table 2).

Table 2

Estimated Sacramento River Steelhead Catch and Angler Days

Year	Keswick Dam to Red Bluff		Red Bluff to Hamilton City		Hamilton City to Knights Landing		Knights Landing to Rio Vista		Total	
	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days	Catch	Angler Days
1967-68	7,712	36,324	5,147	21,837	9,261	33,122	7,319	123,423	29,439	214,706
1968-69	3,278	15,870	2,114	9,947	8,451	20,309	6,024	25,649	19,867	71,775
1969-70	7,034	23,781	5,023	13,211	9,020	19,658	7,713	28,705	28,790	85,355
1970-71	6,031	28,263	3,272	14,901	4,583	10,873	4,297	32,538	18,183	86,575
1971-72 ^{1/}	4,003	27,675	2,783	19,133	4,674	28,674	9,884	53,130	21,344	128,612
1972-73 ^{1/}	4,713	22,007	3,869	15,698	1,979	7,090	2,569	42,475	13,130	87,270
1973-74 ^{1/}	1,392	7,128	1,655	7,069	1,200	3,672	1,326	22,357	5,573	40,226
1974-75 ^{1/}	1,972	7,285	1,756	9,562	1,225	17,288	1,937	133,433	6,890	167,568
Total	36,135	168,333	25,619	111,358	40,393	140,686	41,069	461,710	143,216	882,087
Av.	4,517	21,042	3,202	13,920	5,049	17,586	5,134	57,714	17,902 ^{2/}	110,26 ^{2/}

1/ Catch and angler days adjusted to fall within confidence limits of Petersen type tag and recapture study conducted at same time.

2/ Average catch per angler hour = 0.047

3/ Length of average angler day = 3.46 hours.

Literature Cited

Dralle, P.J. 1965. Sacramento River Salmon and Steelhead Sport Catch, 1962-63. Calif. Dept. Fish and Game, Marine Resources Admin. Report No. 65-5, 7 p.

Hallock, Richard J., and Reginald R. Reisenbichler. 1980. Freshwater and Ocean returns of marked winter-run and late fall-run Chinook Salmon, Oncorhynchys tshawytscha, from the Sacramento River. Calif. Dept. Fish and Game, Anad. Fish. Branch Office Report, 9 p.